

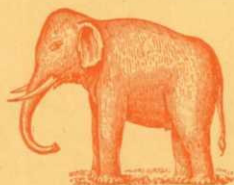
# SERVICING your saws

2006 Paul Womack

Of special

# INTEREST

to all those who wish to  
maintain their Saws in  
perfect working condition.



NONPAREIL

**W. TYZACK, SONS & TURNER LTD.**  
**LITTLE LONDON WORKS      SHEFFIELD 8**

# *How to maintain* **SAW TEETH**

*T*O keep your Saws in good working condition, regular attention to the maintenance of well set and sharpened teeth is necessary.

The resultant benefit in ease and accuracy of sawing will more than repay the time and effort involved, in addition to prolonging the working life of your Saws. Careful observance of the few practical instructions here given will help you to achieve this.

- Four operations are necessary (jointing or topping, shaping, setting and sharpening), although the extent of the first two depends entirely on the condition of the teeth, i.e., whether little worn or very much worn.

# JOINTING or TOPPING

(Levelling the teeth)

Place the saw in a vice with the teeth projecting about 1" to 1½" above the vice jaws.

Take an Elephant Brand Mill Saw File about 10" long (preferably a used one) and lightly draw the flat side along the tops of the teeth from one end of the saw to the other, repeating the operation until the teeth are of uniform height; they will then look something like this :—

Whilst the teeth will probably be uneven in shape, all the tops should now be in a straight line. The next thing is to file them all to the same size and shape, having first lowered the saw in the vice until rather less than ½" is projecting above the jaws.



Fig. 1—Cross-cut teeth after jointing.



Fig. 2—Rip teeth after jointing.

# RESHAPING THE TEETH

This is best done with an Elephant Brand Single or Double Ended Taper Saw File. The width of the file should be rather more than twice the depth of saw tooth to be filed. This ensures maximum service from all three sides.

From the following list select the correct size of file :—

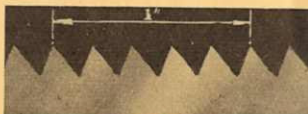
## Hand and Panel Saws.

Points per inch	3½	4	4½	5	5½	6
Single ended Taper Saw File						
(Regular) ... ..	8"	7"	6"	6"	5"	5"
Taper Saw File (Slim) ... ..	—	—	7"	7"	7"	7"
Double ended Taper Saw File	—	—	12"	12"	10"	10"
Points per inch	7	8	9	10	11	12
Single ended Taper Saw File						
(Regular) ... ..	—	4½"	4"	3½"	3"	3"
Taper Saw File (Slim) ... ..	—	6"	6"	5"	5"	5"
Double ended Taper Saw File	—	9"	8"	7"	6"	6"

**For Dovetail and Tenon Saws** use a Slim Taper Saw File 3", 3½", 4" or Double End 6".

Now proceed to file the teeth to the correct shape and depth, making them as uniform as possible. Not more than ¼" of saw should project above the vice jaws ; this prevents "chatter" and the file will last longer.

Hold the file at right angles to the saw, filing straight across. If for cross-cutting do not attempt at this stage to bevel the teeth which must first be set.



6 points per inch.  
Fig. 3—Cross-cut teeth after reshaping.



5 points per inch.  
Fig. 4—Rip teeth after reshaping.

# SETTING

Carpenters' wage-earning saws, and especially Tyzacks Elephant Brand, are finely machine-taper-ground thin to the back for clearance and ease in sawing.

If the teeth are kept well sharpened, only a small amount of set is required. A saw with very sharp teeth and little set is better than one with teeth not so sharp and widely set. Only the points of the teeth should be set, or about half their depth.

**Best Method**—The best method and the one adopted by saw makers is to use a hammer and setting stake. The hammer should be a light cross-pane type, and the setting stake an oblong piece of steel with bevelled edges. A simple setting outfit that will be effective and last for years can be made from a piece of steel about 6" long  $\times$  2 $\frac{1}{2}$ " wide  $\times$   $\frac{3}{4}$ " thick and having two bevelled edges (see Fig. 5). 1 at 45° and the other at 60°.



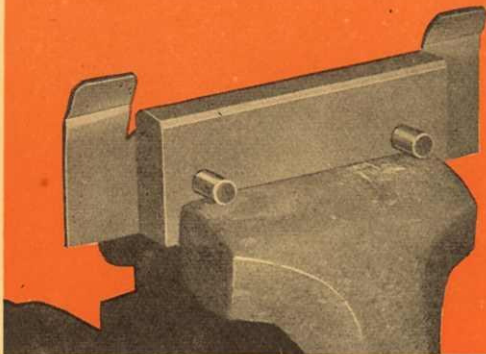
Fig. 5—Saw makers' setting stake.



Fig. 6. Gauge plate.



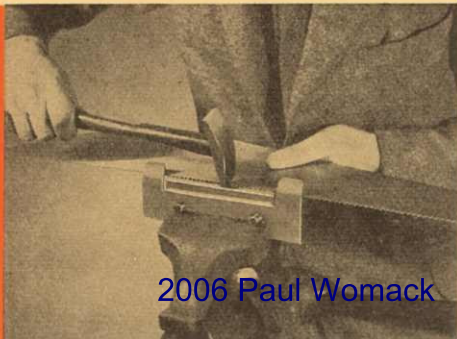
Fig. 7  
Setting  
outfit fixed  
in vice.



Two steel pegs about  $\frac{1}{4}$ " dia.  $\times$   $1\frac{1}{4}$ " long should be fitted as shown, passing through the stake and projecting about  $\frac{1}{4}$ " back and front.

These are for the purpose of attaching the stop or gauge plate, made from soft steel about  $\frac{1}{16}$ " thick (see Fig. 6), shaped as shown and with two holes for the pegs corresponding to those in the setting stake. This plate should be about  $6\frac{1}{4}$ " wide between the lugs so that these may be bent over to suit the amount of set required on the saw teeth. The plate is fixed behind the stake and both secured together in the vice so that the pegs rest on the vice jaws back and front to prevent slipping (see Fig. 7).

Fig. 8  
Illustration  
of saw being  
set.



The saw blade is held flat on top of the stake with teeth protruding over the bevelled edge and pressed up against the lugs at the ends to ensure that the setting is uniform. The lugs which can be adjusted with the hammer, act as gauges to determine the amount of tooth to be set (see Fig. 8).

Holding the saw firmly as above described, give two or three light steady blows with the hammer on the point of each **alternate** tooth, then reverse the saw and set the remaining alternate teeth, taking care to ensure that exactly the same amount of set is given to each tooth, otherwise the saw will not cut a true kerf and strain may be set up with consequent damage.

**Automatic saw sets are not recommended** but if used it is essential to grip **not more than half the tooth** from the point. If too much of the tooth is gripped the setting will be uneven and the edge of the blade wavy, with a tendency to develop cracks in the gullets.

Modern saws are tempered to a degree of hardness that will enable them to withstand heavy work, without the necessity for too frequent resharpenering. Many finely tempered saws are condemned as "too hard" when the teeth break through incorrect use of saw sets.

If an ordinary plain saw set is used the saw should be secured in the vice so that **little more than the teeth** project above the jaws. It should then be possible to put just sufficient set on them without breakage; but whatever method is adopted **the main point to observe** is that exactly the **same** small amount of set must be given to each tooth.

If the setting is uniform there should be no necessity for any subsequent side filing. In cases where the previous set on the teeth is not entirely removed by wear or by filing, it is advisable to follow the original set so as to avoid any possibility of breakage, especially if the saw is fairly old.



# RESHARPENING HAND AND PANEL SAWS

## (a) Cross-cut teeth.

Teeth for cross-cutting must have sharp edges like a knife as they are required to cut across and sever the grain of the wood. This entails bevelling and the **amount** of bevel is determined by the angle at which the file is held to the flat or plane of the blade. Held at right angles ( $90^\circ$ ) no bevel is obtained. Decreasing the angle increases the bevel. Soft woods and general work will permit of an acutely bevelled tooth, filed at about  $45^\circ$  maximum (see Fig. 9).

Hard woods, however, require a more sturdy tooth with less bevel and a filing angle of not less than  $60^\circ$  is required to produce this (see Fig. 10).

With the saw once more held firmly in the vice, the handle at the right-hand side (and just sufficient tooth projecting above the vice jaws) select the correct size of Elephant Brand Single or Double Ended Taper Saw File. Working from point to butt, place the file (pointing towards the handle) with equal pressure against the back edge of the first tooth set away from



Fig. 9.



Fig. 10.

you, and front edge of the tooth set towards you, which should be on the right of the file. Only alternate teeth are filed from one side. Give each alternate tooth 3 or 4 strokes, then reverse the saw in the vice.

With the file again directed towards the butt or handle end, which is now at your left-hand side, and starting at the point end, repeat the operation on the remaining alternate teeth (see Figs. 11 and 12).

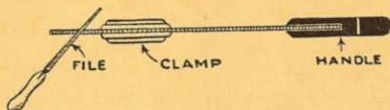


Fig. 11.

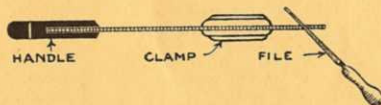


Fig. 12.

Give exactly the same amount of bevel to each tooth and hold the file at the same angle throughout, not pressing too keenly into the gullets (four light strokes are better than two heavy ones).

If these few instructions are carefully followed, teeth of equal bevel and sharpness and of uniform height and set will result, and your saws will give good service if maintained in this condition.

**NOTE :—**Tyzack's ELEPHANT BRAND SAW FILES will be found the best for your purpose. Specially formed teeth, sandblast sharpened and made in four strengths, Heavy, Regular, Slim and Extra-slim. They are the keenest sharpeners and have very strong edges; also ELEPHANT DOUBLE ENDERS, extra long lasting, complete with handles. Your Dealer stocks them. Be sure to ask for TYZACK'S ELEPHANT BRAND.

### Sharpening note.

(a) In bevel sharpening cross-cut teeth, failure to give the same angle of bevel to each alternate tooth **along one side** of the saw will result in uneven teeth, with a tendency for the saw to cut out of true as with uneven setting.

This also applies when sharpening the remaining teeth after reversing ; the saw will tend to pull to one side and this may result in buckling of the blade due to the effort to keep a straight kerf, which is impossible unless the teeth are of uniform set and bevel throughout.



Fig. 13.

### (b) Rip teeth, Fig. 13.

Rip Saw teeth must not be bevelled but filed straight across at right angles. This is done at one operation, starting at the point end of the blade and filing each consecutive tooth without any reversal of the blade. The action of ripping is to saw the wood in the direction of the grain. Rip teeth are really a series of small chisels or planes removing the wood in shavings with each stroke of the saw.

# TENON AND DOVETAIL SAWS

(c) **Tenon Saw Teeth** being very small require the greatest care both in setting and sharpening, as there is very little surface on which to operate. Proceed as for Hand and Panel Saws, i.e., topping, reshaping, then setting and finally sharpening.

Tenon Saws, 12" size and over, should be bevel sharpened, whilst Dovetail Saws 10" and less are sharpened straight across like Rip Saws.

Size of Saw	...	...	...	...	8"	10"	12"	14"
Size of slim Taper Saw File	...	...	...	...	3"	3"	3½"	4"

USE A TYZACK'S ELEPHANT BRAND SLIM TAPER SAW FILE, as above, OR DOUBLE ENDER, 6" Specially formed teeth, sandblast sharpened for extra keen "bite", they have very strong, fine edges for getting into the small gullets.

**It pays to take care of your Saws.** After use, wipe over with an oily rag and keep in a dry place. To protect the teeth from damage a simple guard can be made from a piece of wood about 1" x ½" the same length as the saw and grooved down the middle to take the teeth. This also prevents the blade from being accidentally bent or strained and from contact with other tools when not in use; it can be secured to the saw by passing a piece of string through a hole in the wood and tying it round the saw blade.

# On **CHOOSING** a saw..

## **Points to Consider**

### **HAND AND PANEL SAWS.**

#### **1. Quality and Temper.**

The blade should be tough and tempered to withstand long periods of use before needing resharpener. This ensures long life as it is not sawing wood that wears away the blade, but resharpener with the file, therefore the most economical saw is the one that retains its edge a long time between resharpenings. As you cannot actually test quality before purchase, choose a saw guaranteed by a well-known manufacturer. Tyzacks Elephant Brand Saws are hard and tough and finely tempered ; consistent quality of steel and scientific heat treatment ensure maximum resistance to wear, whilst the teeth will set and sharpen easily.

#### **2. Flexibility.**

A highly tempered and correctly tensioned blade should be flexible to the extent that it will stand a reasonable bending test. Extreme tests such as bending the blade until the point meets the handle are not advisable and do not necessarily denote superiority. Whilst one man might successfully perform this extreme test another would spoil the saw in the attempt.



### 3. Teeth.

The teeth should be very sharp and of uniform size and set.

For crosscutting,

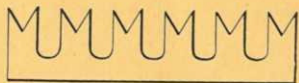
Hand Saws:  $5\frac{1}{2}/6\frac{1}{2}$  points for general work.  
 $7/8$  „ „ hard woods.

Panel : 10/11 „ „ cabinet work, and  
for very fine work 12 points to give  
a smooth cut.

For Ripping, with teeth graduated :

Hand Saws:  $4\frac{1}{2}/5/5\frac{1}{2}$  points for hard woods.  
 $4/4\frac{1}{2}/5$  „ „ general work.  
 $3\frac{1}{2}/4/4\frac{1}{2}$  „ „ rough work.

If the wood is green or wet, the lightning tooth is most suitable, thus :—



### 4. Taper Grinding.

The blade should be machine-taper-ground thin to back, that is, a continuous taper from butt to point and from tooth to back, with the cutting edge of equal gauge throughout the length. Taper grinding ensures maximum clearance and reduces the amount of set required on the teeth. The blade should be dead flat and straight and preferably breasted on the toothed edge, as this further reduces effort in use.

## **5. Balance.**

A good Saw should be nicely balanced, the result of correct weight, grinding and assembly.

This ensures easy control in use with absence of wrist fatigue.

## **BACK SAWS.**

As in good Hand Saws, the steel is most important and the blade should be of high quality, guaranteed by the manufacturers. The thickness or gauge of the blade is important and the finish should be of the best.

Teeth should be regular and sharp. The back should be of good weight, dead flat and straight and in perfect alignment with the blade which it should grip evenly throughout its length. The handle must be accurately fitted so that the whole assembly is true and rigid.



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